UNIVERSITI PUTRA MALAYSIA

DETECTION OF RATIONAL SPECULATIVE BUBBLES IN THE MALAYSIAN STOCK MARKET

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By

SURAYA HANIM MOKHTAR

Thesis Submitted to the Graduate School of Management, Universiti Putra Malaysia, in Partial Fulfillment of the Requirement for the Degree of Master of Science

April 2006

DEDICATIONS

With love to my

parents and family,

for their unfailing love and support

Abstract of thesis presented to the Senate of Universiti Putra Malaysia
in partial fulfillment of the requirement for the degree of Master of Science

DETECTION OF RATIONAL SPECULATIVE BUBBLES IN THE MALAYSIAN STOCK MARKET

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April 2006

Chairman : Professor Annuar Md. Nassir, Ph.D

Faculty : Graduate School of Management

The general purpose of the study is to investigate the existence of rational speculative bubbles in the Malaysian stock market. A bubble is defined as the asset price movement that is unexplainable by the fundamental (Garber, 1990). Meanwhile, rational speculative bubbles can be defined as an attempt to identify the behavior of investors who act irrationally (Cuthbertson, 1996). Specifically, the study aims to detect the rational speculative bubbles over the period for before (1994-1996), during (1997-1998) and after the Asian financial crisis (1999-2003). This study provides a modest attempt to investigate the price behavior of stocks from a behavioral finance perspective. In theory, the bubble is a theoretically appealing; however the fundamental fails to identify the growth or size of the share prices.

This study used abnormal monthly real return of Kuala Lumpur Composite Index and Sectoral Indices (Finance Index, Consumer Product Index, Property Index, Trading and Services Index, Plantation Index, Construction Index and Industrial Product Index) from

1994 until 2003. Statistical analysis used in this study is Duration Dependence Test using the Log Logistic Hazard Model and the Weibull Hazard Model.

The empirical findings of the study for both models: (1) Log Logistic Hazard Model and: (2) Weibull Hazard Model revealed the existence of rational speculative bubbles in the Malaysian stock market for before (1994-1996) and after (1999-2003) the Asian financial crisis 1997. In general, the pattern of the bubble behavior for before and after the Asian financial crisis 1997 on Composite Index and Sectoral Indices replicate similar findings in which the bubbles' sizes are huge in 1995. The practical issue suggests from this scenario, the policy makers have to react approximately two years before crisis. Furthermore, the findings illustrate that the bubbles developed over time and explode during crisis. Moreover, investor tends to overact or exaggerate and implies that price movement contains bubbles, apart from the normal white noise.

This study presents a number of practical implications to academicians, investors and most importantly to policy makers. Prior to the investigation, there is no published evidence on the detection of rational speculative bubble in the Malaysian stock market especially for the year of 1994 until 2003, therefore this study provides a significant contribution to the body of knowledge particularly in emerging market. The existence of rational speculative bubble in the market lead to better decisions for investors and policy makers on how to minimize risk subsequently, as time goes, market efficiency improves.

Abstrak tesis yang di kemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi sebahagian daripada keperluan untuk ijazah Master Sains

MENGESAN BUIH SPEKULASI RASIONAL DI PASARAN SAHAM MALAYSIA

Oleh

SURAYA HANIM MOKHTAR

April 2006

Pengerusi : Profesor Annuar Md. Nassir, Ph.D

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Tujuan utama kajian ini ialah untuk menyiasat kewujudan buih spekulasi rasional di pasaran saham Malaysia. Buih didefinasikan sebagai kenaikan harga asset yang tidak boleh dijelaskan oleh teori asas kewangan. Sementara itu, buih spekulasi rasional boleh dijelaskan sebagai mengesan gelagat pelabur yang tidak rasional di dalam pasaran. Secara terperincinya, kajian ini bertujuan mengesan buih spekulasi rasional pada masa sebelum (1994-1996), semasa (1997-1998) dan selepas (1999-2003) krisis kewangan Asia 1997. Kajian ini menyiasat gelagat harga saham daripada pandangan "Behavioral Finance". Secara teorinya, kenaikan harga saham yang berterusan itu wujud walaubagaimanapun, teori asas kewangan gagal mengesan perkembangan dan saiznya.

Kajian ini menggunakan pulangan abnormal bulanan benar Kuala Lumpur Komposit Indeks dan Sektor Indeks (Kewangan, Barangan Pengguna, Hartanah, Dagangan/ Khidmat, Perladangan, Pembinaan dan Barangan Industri) dari tahun 1994 sehingga 2003. Analisis statistik yang digunakan dalam kajian ini ialah "Duration Dependence

Test" dengan menggunakan "Log Logistic Hazard Model" dan "Weibull Hazard Model".

Penemuan empirik kajian ini untuk kedua-dua model: (1) "Log Logistic Hazard Model" dan: (2) "Weibull Hazard Model" mendedahkan bahawa buih spekulasi rasional wujud di pasaran saham Malaysia pada sebelum (1994-1996) dan selepas (1999-2003) krisis kewangan Asia 1997. Secara umumnya, buih saham mereplikakan penemuan yang serupa, dimana buih adalah besar pada tahun 1995. Penemuan kajian ini juga menunjukkan buih akan terbentuk setiap masa dan berkembang, seterusnya menurun secara mendadak semasa krisis kewangan berlaku. Kajian ini juga memberi cadangan kepada penggubal polisi agar bertindak kira-kira dua tahun sebelum krisis ekonomi berlaku. Tambahan pula, pelabur cenderong untuk terlebih bertindak dan seterusnya buih akan terbentuk sekiranya harga saham melebihi "normal white noise".

Kajian ini membentangkan beberapa implikasi praktikal kepada ahli akademik, pelabur dan yang paling penting kepada penggubal polisi. Sebelum kajian ini dijalankan, tiada lagi bukti penerbitan keatas pengesanan buih spekulasi rasional di pasaran saham Malaysia terutamanya untuk tahun 1994 hingga 2003, oleh yang demikian kajian ini memberi sumbangan yang bermakna kepada pasaran yang sedang membangun. Kewujudan buih spekulasi rasional di dalam pasaran mengarah para pelabur dan penggubal polisi membuat keputusan yang bijak bagaimana untuk meminimakan risiko dan seterusnya mempertingkatkan kecekapan pasaran.

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I certify that an Examination Committee met on **8 March 2006** to conduct the final examination of **Suraya Hanim Binti Mokhtar** on her **Master of Science** thesis entitled **"Detection of Rational Speculative Bubbles in the Malaysian Stock Market"** in accordance with the Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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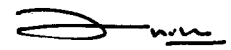
DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



SURAYA HANIM BINTI MOKHTAR

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LIST OF ABBREVIATIONS

BNM	Bank Negara Malaysia
CI	Composite Index
KLCI	Kuala Lumpur Composite Index
GDP	Gross Domestic Product
NPL	Non Performing Loan
SC	Securities Commission
S&P	Standard and Poors
U.S	United States

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter sets the background for the thesis in presenting the definition of bubble and rational speculative bubbles, the development of the Malaysia economy and Malaysian stock market, the problem statement, research objectives, significance and contribution of the study.

1.2 Background of the Study

A bubble is defined as the asset price movement that is unexplainable by the fundamentals (Garber, 1990). A bubble can also be identified as a sharp rise in the price of an asset in a continuous process (Kindlerbeger, 1978). Meanwhile, rational speculative bubbles can be defined as an attempt to identify the behavior of investors who act irrationally, such as when herding occurs (Cuthbertson, 1996). Statman (1998) identifies the irrational behavior of investors as an investor who trade because of personal satisfaction.

There are five examples of historic speculative bubbles throughout history, namely the Dutch Tulipmania (1634-1638); the Mississippi Bubble (1719-1920); the South Sea

Bubble (1720); the Bull Market of the Roaring Twenties in the US (1924-1929); and Japan's "Bubble Economy" of the 1980s.

An important feature of rational speculative bubbles is that investors realise share prices exceed their fundamental value but they believe that there is a high probability that the bubble will continue to expand and lead to a high return, which compensates them for the probability of crash. This justifies the rationality of staying in the market despite overvaluation (Chan et al., 1998). This idea can be described as the greater fool theory. It implies that although one may be a fool for buying an asset which is overpriced, one will profit if there are greater fools who will pay even more for it (Montier 2003).

Market based on the greater fool theory always collapse. Once the greatest fool is found, the rising stock price process cannot continue. In many ways, a speculative binge is like a chain letter. Everyone involved in a chain letter believes that he or she will get rich. However, a chain letter is like a zero-sum game. It implies that if someone does get rich, others must get poorer.

Furthermore, Shleilfer and Summers (1990) stated that rational speculative bubbles would divert financial flows from investment in real capital and focus on short-term investment. Rational speculative bubbles also create additional price risk and increase the instability of the economy (Binwanger, 1999)

There are several empirical investigations on the existence of rational speculative bubbles in overseas markets; among of them are West (1987), Diba and Grossma (1988), Rappoport and White (1993), McQueen and Thorley (1994), Chan et al., (1998), Harman and Zuehlke (2001) and recently Watanapalachaikul and Islam (2003).

As mentioned earlier, speculators are the likely candidates to cause rational speculative bubbles. Speculators create true mania, producing price bubbles that sooner or later burst and cause asset prices to decline. Corresponding to that, there was a study conducted by Mansor and Lim (1992) who assert that most of the investors in the Malaysian stock market act as speculators especially when the economy is good. Further justification on this finding is summarised in Table 1.1.

Table 1.1: Method of Stock Market Analysis of Malaysian Investors

	Bullish Market		Bearish Market	
Method	**N**	**% of Sample**	**N**	**% of Sample**
Speculation	140	72.9	63	32.8
Fundamental method	62	32.3	99	52.6
Technical method	30	15.6	49	25.5
Others	3	1.6	1	0.5

Sources: Mansor, M.I and Lim, C.F (1992). *Profile of individual investors in the Kelang Valley area.* Investment Analysis in the Malaysian Securities Market, RIIAM, 381-393.

Mansor and Lim (1992) conducted a survey to investigate the investment behavior of individual investors in the Kelang Valley. In their study, they found that during bullish periods, speculation was rampant with 73 percent of the respondents acted as speculators. About 32 percent of the respondents used fundamental analysis, while only 16 percent used technical analysis. However, they also found that the situation was

different during bearish periods. Only 32 percent of the respondents speculated in the bearish markets. More than half (52%) of the respondents used fundamental analysis. Meanwhile, the use of technical analysis increased from 16 percent during the bullish periods to 26 percent during the bearish period. In general, Mansor and Lim (1992) revealed that speculators act when the economy is good.

The Malaysian economy has it share of ups and downs throughout the 90s and until 2003, more significantly during the 1997 Asian financial crisis. Do rational speculative bubbles exist in the Malaysian stock market? This is the motivation of the present study. The present study attempts to detect rational speculative bubbles using Duration Dependence Test. In this test two models are employed: (1) the Log Logistic Hazard Model and (2) the Weibull Hazard Model. This is further dwelled in great details in section 3.31 and 3.3.2 under Data and Methodology.

1.3 Malaysian Economy

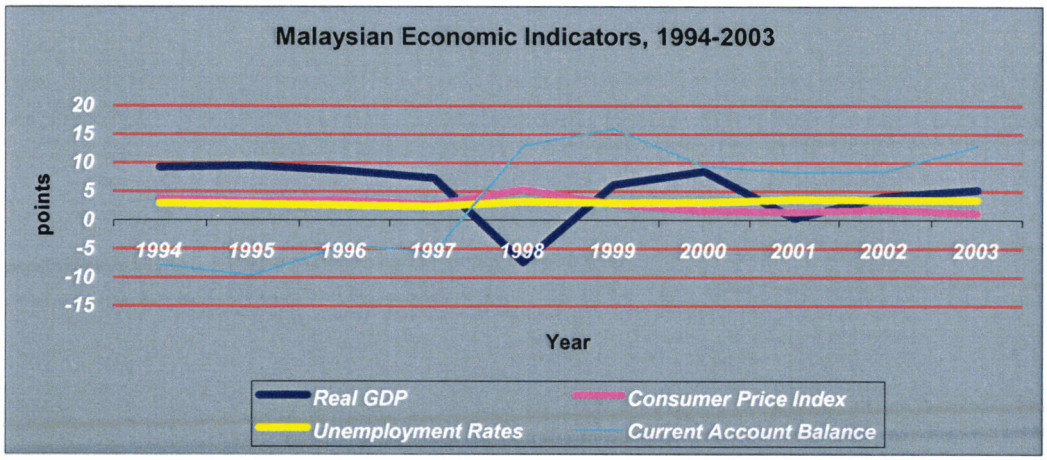
This section explains the development of the Malaysian economy before (1994-1996), during (1997-1998) and after (1999-2003) the Asian financial crisis.

Malaysia is the second fastest growing economy in the South East Asian region during the 1990s, prior to the crisis. Before the crisis, real output growth averaged 8.5 percent a year and unemployment stayed below 3 percent. Similarly, prices and exchange rates remained stable. International reserves were robust, which led to high growth rates

averaging 8.9 per cent during the period of 1988-1996. Inflation rate also remained low at 3-4 per cent per year. Moreover, the increasing emphasis on manufacturing and electronics in particular, ensured high employment rates for the country.

However, the economic scenario during and after the crisis painted a different picture. Figure 1.1 summarises the key economic indicators pre-, during and post-crisis era (1994-2003). The figures reveal that the Malaysian economy was stable and healthy before the 1997 Asian financial crisis.

Figure 1.1: Malaysian Economic Indicators, 1994-2003



Source: Bank Negara Malaysia, Annual Report- various issues

Malaysia's economic vulnerabilities stepped up significantly from early 1997 through the period following the onset of the crisis in mid-1997, as market confidence increasingly diminished along with the rest of the region. Large portfolio outflows took place, and equity and property values declined substantially. The ringgit came under tremendous pressure. As currency traders took speculative positions in the offshore ringgit market in anticipation of a large devaluation, the offshore ringgit interest rates

increased markedly relative to domestic rates. This heightened upward pressure on domestic interest rates, intensified outflows of ringgit funds and exacerbated banks' liquidity problems and overall financial distress. The Malaysian corporate sector experienced significant loss of wealth as a result of sharp falls in the value of real estate and equities used as bank collateral. Corporate incomes and cash flows also declined, leaving some corporations unable to service their debt.

The initial response of the authorities was to hike interest rates and tighten fiscal policy in an attempt to anchor market confidence in the financial system. In early 1998, fiscal policy was revised to a more expansionary stance. This policy mix proved to be insufficient to correct external imbalances and bring about the needed economic adjustment. The contagion effects of the crisis and the associated economic contraction were far worse than anticipated. Domestic imbalances quickly emerged as growth rates slowed and then turned sharply negative in early 1998. Market confidence faltered amid adverse regional developments and uncertainties. Anticipation of further devaluation of the ringgit heightened. By the mid of 1998, the stock market had fallen to its lowest level in recent history.

In September 1998, the Malaysian authorities launched a policy package designed to insulate monetary policy from external volatility. Measures included an exchange rate pegged to the U.S. dollar and selected exchange and capital controls, complemented by a fiscal stimulus package that stepped up capital spending. These measures permitted the subsequent lowering of interest rates. The authorities also pursued fundamental

reforms in the financial and corporate sectors, including a bank consolidation program and an upgrading of prudential regulation and supervision in line with international best practices.

Malaysia's recovery in 1999–2000 was among the strongest of the Asian crisis economies, led by buoyant world demand for electronics and supported by accommodating macroeconomic policies. The external current account turned into large surpluses, allowing a buildup of international reserves. Unemployment declined, and inflation remained low. The strong growth and a gradual easing of capital controls helped improve investor confidence.

1.4 Development of Malaysian Stock Market

The development of the Malaysian stock market has prominent implications to the country. It serves as a leading indicator of national economic performance. This section will explain the development of the Malaysian stock market throughout the years of 1987 until 1996.

Kuala Lumpur Stock Exchange experienced an upward trend throughout the period of 1987 through 1996. The impressive economic growth during this period resulting from the booming economy had increased the stock prices and values. However, Composite Index and most of the Sectoral Indices dropped to the trough after experiencing the sudden shock in 1997 Asian financial crisis. During the crisis in 1997, Kuala Lumpur

Composite Index dropped from 1100 points in June 1997 to 262 points in July 1998, the lowest point in the history of KLSE.

The depreciation of the Malaysian Ringgit had an adverse impact on KLSE. Although the Kuala Lumpur Composite Index started to decline in the early 1997, it fell even more rapidly following Thailand's declaration to float the Baht. During the first six months of the crisis (July 1 to December 31, 1997), Kuala Lumpur Composite Index declined by 44.9% (BNM, 1998).

The government, in the early August 1997, adopted a series of measures to restore the index position. Bank Negara Malaysia imposed a US$2 million limit on the outstanding non-commercial-related Ringgit offer-side swap transaction with any single foreign customer to prevent currency speculation. In addition, short selling activities were also prohibited in the stock market. Furthermore, local funds were encouraged to buy shares when foreign funds were moving out the country. The Securities Commission (SC) also took actions including the imposition of trade restrictions on several stock broking companies and the issuance of directives for corporate restructuring.

However, the above-mentioned actions, failed to stop the market panic. The Kuala Lumpur Composite Index plunged to 477 points on January 12, 1998 from the high of 1271 in February 25, 1997. The loss was about 800 points or 63 per cent. In 1997, the market capitalisation (comprising the main board and the second board) was RM917 billion but it sunk to nearly half of RM308.69 billion by January 12, 1998.

The Kuala Lumpur Composite Index recovered briefly with the festivals rally and increased to 745.12 in early March 1998. Unfortunately, from April 1998, the Kuala Lumpur Composite Index started to fall again. This was due to the report of poor corporate performance together with the depreciation of the Yen in mid-May. It was reported that the Kuala Lumpur Composite Index was 402.7 point at the end of July 1998. Nevertheless, by September 1, 1998, the first day the exchange controls took effect, the index fell to the historic lowest point of 262.70 with a market capitalisation of RM181.5 billion. Between July 1, 1997 to September 1, 1998, KLSE's market capitalisation fell by about 76% to RM181.5 billion.

However, the index started to gradually increase after the implementation of the exchange controls on September 1, 1998 coupled with government efforts to rejuvenate the economy. The stock market rebounded from the lowest position to 373.5 on the last week of September 1998. The CI closed the year at 586.13 points (123% increases from September 1) with a market capitalisation of RM 375 billion. Moreover, the Kuala Lumpur Composite Index move more than doubled from 300 prior to the imposition of the capital controls, to more than 600 in February 1999, and even went beyond the 800 points psychological barrier in July 1999. Also as the end of 2003, the KLCI attained 793.9 points with market capitalisation of RM640.5 billion. These movements are illustrated in Figure 1.2.